Dear Editor,

the manuscript is corrected accoridng to the reviewers sugestions and it is improved. The authors accepted all suggestions of the reviewers.

**Response to Reviewer A**

**1. Introduction part**: The chemical properties of the investigated pesticide is described better and the advantages of the kinetic methods over already published methods is described in more detail.

**2**. The sentence in the line 259 (previous is rewritten: In Figure 2. the influence of pH on the initial rate in both the presence and absence of DFB is shown.

The sentence in the line 272 (previous 205) is rewritten too: In Figure 3.the dependence of the initial reaction rate on the H2O2 concentration is shown.

The sentence In the line 286 is rewritten : In Figure 4. the influence of SA concentration on the reaction rates is shown.

The sentence in the line 325-327 is corrected : The calibration curves, at the temperature of 25.0±0.1°Ccan be used for the determination of DFB concentrations in the interval 0.102-3.40 µg mL-1(Figure 6) and 3.40-28.30µg mL-1(Figure 7), respectively.

**3**. Line 204: The whole validation segment of the proposed method is explained inmore detail.

The separate sections are presented including Linearity,Precision and Accuracy, Limit of Detection and Limit of Quantification, Statistical analysis, selectivity and sensitivity.

**4.**Line 207: Linearity section is better explaned. For evaluation of linearity, determination of DFB was done at ten concentration levels for each calibration curve (0.102 – 3.40 μg mL-1 and 3.40 – 23.80 μg mL-1) and it was assessed by the correlation coefficients. Each concentration was analyzed for five times.

It is known, in kinetic methods of analysis, in order to improve the accuracy of the proposed method we choose three concentration of pesticide from the calibration line (lowest, median and highest)and examined the accuracy of the method.In that manner the whole investigated interval of the concentration is covered. In order to evaluate the accuracy and precision of the method, three concentration of DFB from the calibration curve were selected. The rate of the reaction for chosen concentration were measured in five replicates. Standard solutions of 0.102, 1.70, and 3.40 μg mL-1 of DFB were analyzed using the recommended procedure.

**5**. In the line 371 – Table 2 (previous 281) we added the number of replicates (n).

**6**. In the line 381(previous 297) the section Analysis of the real samples is better exlaned.In order to improve the accuracy of the proposed method, different volumes of DFB standard solution were added to water and baby food samples and were examined to cover the whole calibration range.

**Response to Reviewer B**

**1**. The title of the manuscript is corrected. The HPLC from the title is deleted. And title is now: „DEVELOPMENT OF KINETIC SPECTROPHOTOMETRIC METHOD FOR INSECTICIDE DIFLUBENZURON DETERMINATION IN WATER SAMPLES AND BABY FOOD SAMPLES“.

**2**. The quality of english language is corrected and manuscript is improved.

**3**. In line 23shortened name of pesticide diflubenzuron is given as DFB.

**4**. In Introduction part the explanation about kinetic method is given, it significance and applicationfor determination of various chemical components. The previous explained kinetic method is compared with new one.

In Introduction part the chemical characteristics of diflubenzuron are given.

Some of the references are deleted.

**5**. Line 239-251: The reaction mechanism is proposed and explaned in section **Results and Discussion:**

The influence of the inhibitors on the rate of the catalytic reactions can be explained by various mechanisms. The decrease in the reaction rate under the influence of an inhibitor can be explained by forming of an inactive complex. In the catalytic reaction, the mechanism of reaction is based on the complex formation between a metal ion and a redactor (substrate) with a specific coordination number of the metal ion. By adding a pesticide to the reaction mixture, a mixed transmission complex substrate – catalyst – inhibitor is formed due to bonding of the metal ion to free electrons of donor atoms in the pesticide molecule (most frequently N,O,S). Depending on the stability of the formed triple complex and the strength of the metal ion-donor atoms of the pesticide, the catalyst activity decreases in the indicatory reaction. This means that the reaction takes much more energy to degrade such complex, resulting in decreased reaction rate, namely the inhibitory effect of the pesticide is expressed. This mechanism cannot be proved by spectrophotometry, although certain investigations implied ESR method in order to confirm the presumed reaction mechanism.

**6**. Line 175-178: The sentence which explained the procedure for preparation of water samples is corrected and better explained.

The **Experimental part**is clearly written and it is better explained procedure for preparation

samples of water and food before the application of kinetic method and HPLC method.

**7**. The **reaction order** is better explained

In order to determine the lowest possible determinable concentration of insecticide diflubenzuron, working conditions needed to be optimized. Therefore, the dependence of the rate of reactions on the concentration of each of the reactants was determined. A tangent method was used to process the kinetic data. The rate of the reaction was obtained by measuring the slope of the linear part of the kinetic curves to the absorbance-time plot (slope = dA/dt) (D. Perez-Bendito, M. Silva, Kinetic Methods in Analytical Chemistry, Ellis Horwood, Chichester, 1988; H. A. Mottola, Kinetic Aspects of Analytical Chemistry, John Wiley & Sons, New York, 1988).

The dependence of the rate of reactions on the concentration of each of the reactants (H+, H2O2, SA, Co2+) obeyed the following rate equation:

rate = dA/dt = k·cn

where k is the rate constant, c is the concentration of each of the reactants, n is the order of reaction. The logarithmic form of the equation is written as:

log rate = logk + nlogc

The value of “n” representing order of reaction in the regression equation.

The kinetic equations for the catalysed (I) and inhibited (II) reaction were deduced based on obtained graphic correlations:





The equations are valid for the following concentrations:

pH 7.0-8.0 (I, II);

H2O2 0.04-0.012 mol L-1 (I) and 0.04-0.24 mol L-1 (II);

SA 1.2×10-3-4.8×10-3 mol L-1 (I, II);

Co2+ 2×10-5-10×10-5 mol L-1 (I, II);

DFB 0.102-3.40 μg mL-1 and 3.40-23.80 μg mL-1 (II).

Line 274-275 In the case of H2O2, typewritten mistake was made. Inhibited reaction (II) is first order (not minus first order) in whole concentration interval of H2O2 and catalytic reaction (I) is first order in the interval 0.04-0.12 mol L-1 but in higher concentrations than 0.12 mol L-1 is minus first order.

The basic concept, which is defined in the chemical kinetics is the chemical reaction rate. Line 355, 356 (previous 271, 272)





Equations present the rates of the reactions. The rate of the reaction is often found to be prportional to the concentration of the reactants raised to a order (power). The coefficient *k* is called the rate constant for the reaction.It is the measure of the reaction rate. Based on the value of *k* we can talk about fast or slow chemical reactions.

**8**. Line 326-328 (previous 259-260) there are given two concentration intervals for DFB determination

Under the optimum reaction conditions a linear calibration graph of DFB was obtained in the interval 0.102 – 3.40 μg mL-1 and 3.40 – 23.80 μg mL-1.

The both calibration curves are presented (Figure 6, Figure 7).

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